

REMARKS

In box 12 of the summary, the Office action acknowledges the claim of priority and receipt of the certified documentation in support of the claim.

Claims 1, 2, 5 and 6 are pending. Claim 1 is independent, and each of claims 2, 5 and 6 is dependent. The claims have all been amended individually and by amendment of the independent claim, and the application is believed to be in condition for allowance. Reconsideration of the application is respectfully requested in view of the amendments to the claims and the following remarks.

Claims 1, 2, 5 and 6 are objected to because of various informalities. Correction has been made as required, and withdrawal of the objections is respectfully requested.

Claims 1, 2, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Renfrew et al., USP 2,199,587. The Office action refers particularly to passages in the patent at page 1, lines 1-30 and 44; and page 2, lines 19-21. It is believed that the respective first columns of pages 1 and 2 are the ones alluded to. The Office action states that the reference discloses, in certain embodiments, a porous sheet impregnated with a suitable thermoplastic or thermoset resin having on an outer surface a powdery thermoset resin that can be either a phenolic or a urea-based resin. The Office action further states that composites such as those set forth in claims 5 and 6 are made therefrom.

The rejection is respectfully traversed. The amended claims are directed to a bondable sheet comprising a porous sheet into which a precondensate of polyhydric phenol or a precondensate of monohydric phenol and polyhydric phenol is impregnated. There is also provided in accordance with the invention as now claimed powder of a thermosetting resin comprising a phenolic resin that is meltable by heating on the surface of the porous sheet.

The amended claims, for which the application provides support at the middle of page 4 and the paragraph bridging pages 7 and 8, thus recite features including a particular

combination of materials: a particular material to be impregnated into the porous sheet and a particular material to be used as the powder. The material impregnated into the porous sheet includes a particular precondensate (of polyhydric phenol or of monohydric phenol and polyhydric phenol). The powder comprises a phenolic resin that is meltable by heating on the surface of the porous sheet.

As the specification explains on the first two pages, the prior art has a number of deficiencies that the present invention addresses and solves. One problem of the prior art is that a thermosetting resin in B-stage impregnated into a porous sheet may harden beyond B-stage during storage and thereby lose its bondability with another sheet. Another problem arises when a bondable sheet whose surface bears a hot melt adhesive powder is put on another sheet and pressed and molded. Since the pressing and molding are carried out at a temperature higher than the curing temperature of the thermosetting resin impregnated into the porous sheet, the hot melt adhesive powder is melted excessively, so that a satisfactory initial bonding strength cannot be achieved. As a result, the bondable sheet may peel off from the other sheet. Such delamination is a serious problem of the prior art.

In accordance with the invention, the selection of a precondensate of polyhydric phenol or a precondensate of monohydric phenol and polyhydric phenol helps to address the problem of hardening beyond B-stage during storage. But even if the resin impregnated into the bondable sheet hardens beyond B-stage during storage, the powder of a thermosetting resin comprising a phenolic resin which is meltable by heating on the surface of the porous sheet does not harden but maintains its bondability.

Laminated sheets made in accordance with the teaching of Renfrew exemplify the prior art and exhibit problems the present invention solves.

In accordance with the teaching of the patent, the material used to impregnate the base material may be polymerized methyl methacrylate dissolved in methyl methacrylate monomer in which is also dissolved 2% benzoyl peroxide and 1% Spirit Red III (Example 1); boiled linseed oil varnish (Example 2); a solution of viscose (Example 3); and an aqueous

syrup of urea formaldehyde resin (Example 4). Other materials are listed in the paragraph bridging pages 1 and 2 of the patent. The impregnating materials do not include applicants' precondensates.

The powder of Example 1 is comminuted polyisopropyl methacrylate. The powders of Examples 2-4 are made from, respectively, polymethyl methacrylate and ground mica; methyl methacrylate polymer and cork dust; and urea formaldehyde. The left column of page 2 of the patent discloses at lines 14-25 that the powders may be the polymerized derivatives of acrylic acid, its homologs, polymerized vinyl derivatives, various rubbers, urea formaldehyde condensation products, phenol formaldehyde condensation (not precondensation) products, cellulose derivatives, "natural" resins, shellac and bitumen, with or without dyes, fillers, etc.

The casual mention, in a long list of broad possibilities, of a powder of "phenol formaldehyde condensation products" (itself a very broad class) would not have taught a person skilled in the art to select specifically a precondensate of polyhydric phenol or a precondensate of monohydric phenol and polyhydric phenol for the impregnating material. Even more, it would not have taught a person skilled in the art to use such an impregnating material in combination with a powder of a thermosetting resin comprising a phenolic resin that is meltable by heating on the surface of the porous sheet.

The laminated sheets disclosed by the patent lack some key characteristics of laminated sheets made in accordance with the present invention. The prior-art sheets do not store well for long periods and are subject to delamination. They thus exhibit the problems that the specification notes and the invention remedies.

The other documents that the Office action cites, but does not rely upon, also fail to disclose or suggest the invention. In particular, USP 4,496,415 discloses a porous sheet onto which thermosettable, B-stage resin is applied as a powder. A phenol-formaldehyde resin is illustrated as a thermosettable, B-stage resin. But the precondensate of the present invention is not disclosed.

PATENT
2710/73654
10/518,971

USP 3,934,332 and JP55-93612 A also fail to disclose the precondensate of the present invention that is impregnated in a porous sheet and supplied with a powder in accordance with the present invention.

There being no other objections or rejections, it is respectfully requested the examiner enter this amendment and issue a notice of allowance.

Respectfully submitted,
COOPER & DUNHAM LLP



Donald S. Dowden
Reg. No. 20,701